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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,460	02/15/2002	Bettina Moeckel	218472US0X	7547

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EXAMINER	
HUTSON, RICHARD G	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 02/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/075,460	MOECKEL ET AL.	
	Examiner	Art Unit	
	Richard G Hutson	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12-23,25-30 and 41-91* is/are pending in the application.

4a) Of the above claim(s) *12-23,25-30 and 82-87* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *41-81, 88-91* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicants cancellation of claims 1-11, 24 and 31-40 and the addition of new claims 41-91, in the paper of 12/5/2003, is acknowledged. Claims 12-23, 25-30 and 41-91 are at issue and are present for examination.

Applicants' arguments filed on 12/5/2003, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Applicants continued comments with regard to the rejoinder of the nonelected groups are acknowledged, however these will be dealt with upon the indication of allowability of the elected claims as per MPEP 821.04.

Claims 12-23 and 25-30 and 82-87 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed in Paper No. 6.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 41-81 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 41 (claims 42-81 dependent on) is indefinite in the recitation "...an activity of the ribosomal protein S12." It is unclear what "activity of the ribosomal protein S12" applicants refer. A biologically active protein may encompass a variety of different biological activities. These include but are not limited to immunological activity, such as acting as an antigen for an antibody; regulatory activity, such as that exhibited by many proteins which control transcription and/or translation of not only their encoding nucleic acids but other nucleic acids as well; or enzymatic activity, for example, RNA polymerase activity. It is not clear what is encompassed by the "activity" of ribosomal protein S12 and if includes biological activities in addition to enzymatic activity.

In response to this rejection which was previously made for claim 2, applicants cancelled the claim and added new claims 41-91, but did not comment on the rejection as it applied to the newly added claims.

Claim 41 is further indefinite in part a) which is drawn to a polynucleotide which 95% identical to a polynucleotide that encodes SEQ ID NO: 2 and that has an activity of the ribosomal S12 protein. The referred to activity is an activity of the encoded protein, not the polynucleotide itself, which results in confusion in part a).

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 41-46, 48, 49, 51-53, 55, 59-76 and 88-91 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the

specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection was stated in the previous office action as it applied to claims 1-4, 6, 7, 9, 10, 24 and 31-40. In response to this rejection, applicants cancelled claims 1-4, 6, 7, 9, 10, 24 and 31-40 and added new claims 41-91. Applicants did not comment as to how this previous rejection related to the newly added claims.

The genus of claims 41-46, 48, 49, 51-53, 55, 59-76 and 88-91 are directed to all possible polynucleotides which are at least 95% identical to a polynucleotide which encodes for a polypeptide of SEQ ID NO: 2, and has an activity of the ribosomal S12 protein (claims 1-4, 6, 7 and 24) (See also above 112 2nd paragraph rejection) and vectors and host cells comprising said polynucleotides. Claims 88-91 are directed to all possible polynucleotides comprising at least 15, 20 or 30 consecutive nucleotides of SEQ ID NO: 1. The specification, however, only provides the representative species of polynucleotide of SEQ ID NO: 1 and 3, encompassed by these claims. There is no disclosure of any particular structure to function/activity relationship in the single disclosed species. The specification also fails to describe additional representative species of these polynucleotides by any identifying structural characteristics or properties. Given this lack of additional representative species as encompassed by the claims, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 41-46, 48, 49, 51-53, 55, 59-76 and 88-91 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a polynucleotide which encodes a protein having the amino acid sequence of SEQ ID NO: 2, does not reasonably provide enablement for any polynucleotide which comprises a mere 15 consecutive nucleotides of SEQ ID NO: 3 or is 95% identical to SEQ ID NO: 1. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

This rejection was stated in the previous office action as it applied to claims 1-4, 6, 24 and 31-40. In response to this rejection, applicants cancelled claims 1-4, 6, 7, 9, 10, 24 and 31-40 and added new claims 41-91. Applicants did not comment as to how this previous rejection related to the newly added claims.

Factors to be considered in determining whether undue experimentation is required, are summarized in In re Wands (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in

the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 41-46, 48, 49, 51-53; 55, 59-76 and 88-91 are so broad as to encompass any polynucleotide which is at a mere 95% identical to a polynucleotide which encodes a polypeptide of SEQ ID NO: 2, or those polynucleotides comprising a mere 15 successive nucleotides of such a polynucleotide.

The claims rejected under this section of U.S.C. 112, first paragraph, place insufficient structural **and** functional limits on the claimed polynucleotides (See also above 112 second paragraph rejections). Since the amino acid sequence of a protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. The same is true of a polynucleotide sequence, as the nucleic acid sequence of the polynucleotide directly correlates with the amino acid sequence of the polypeptide. However, in this case the disclosure is limited to a polynucleotide which encodes a protein having the amino acid sequence of SEQ ID NO: 2.

While recombinant and mutagenesis techniques are known, it is not routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims, and the positions within a polynucleotides sequence where nucleic acid

modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any polynucleotide and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given polynucleotide to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of the claims which encompass those polynucleotides and DNAs having the claimed structural relationship to SEQ ID NO: 1/2, because the specification does not establish: (A) regions of the polynucleotide structure which may be modified without effecting the desired activity; (B) the general tolerance of the claimed polynucleotides to modification and extent of such tolerance; (C) a rational and predictable scheme for modifying any nucleic acid residue of SEQ ID NO: 1 with an expectation of obtaining the desired biological function; and (D) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful. Because of this lack of guidance, the extended experimentation that would be required to determine which substitutions would be acceptable to retain the desired activity claimed and the fact that the relationship between the sequence of a peptide and its tertiary structure (i.e. its activity) are not well understood and are not predictable (e.g., see Ngo et al. in The Protein Folding Problem and Tertiary Structure Prediction, 1994, Merz et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495, Ref: U, Form-892), it would require undue experimentation for one skilled in the art to arrive at the majority of those polynucleotides of the claimed genus.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including any polynucleotide with the claimed structural relationship to SEQ ID NO: 1/2. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 88-91 are rejected under 35 U.S.C. 102(a) as being anticipated by Satochi et al. (EP 1 108 790, reference AP on IDS, Paper No. 4).

Satochi et al. teach a number of polynucleotides, including both DNAs and RNAs derived from coryneform bacteria. Specifically Satochi et al. teach a polynucleotide SEQ ID NO: 553 which encodes a polypeptide (SEQ ID NO: 4053 having a best local similarity score of greater then 95% to the amino acid sequence of instantly disclosed

SEQ ID NO: 2 and comprises at least 15 consecutive nucleotides of SEQ ID NO: 1 in the referred to regions. Satochi et al. further teach vectors comprising said polynucleotide and coryneform bacteria transformed with SEQ ID NO: 553. Thus claims 188-91 are anticipated by Satochi et al.

Claims 88-91 are rejected under 35 U.S.C. 102(b) as being anticipated by Nair et al. (Nucleic Acids Research, Vol 21, No. 4, page 1039, 1993, reference AV on IDS, Paper No. 4).

Nair et al. teach the cloning and nucleotide sequence analysis of the ribosomal S12 gene of Mycobacterium *intracellulare*. While it is acknowledged that the taught polynucleotide is not from coryneform bacteria (see above 112 second paragraph rejection), the taught polynucleotide encodes the ribosomal S12 protein and the encoded protein has a best local similarity score of greater then 91% to the instantly disclosed polypeptide of SEQ ID NO: 2 and comprises at least 15 consecutive nucleotides of SEQ ID NO: 1 in the referred to regions. Thus since the polynucleotide disclosed by Nair et al. meets all of the disclosed structural features of the claimed polynucleotide, claims 88-91 are anticipated by Nair et al.

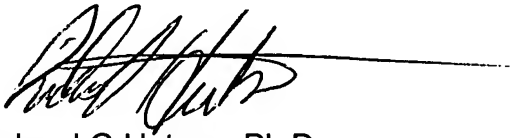
Remarks

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard G Hutson whose telephone number is (703) 308-0066. The examiner can normally be reached on 7:30 am to 4:00 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on (703) 308-3804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard G Hutson, Ph.D.
Primary Examiner
Art Unit 1652

rgh
2/17/2004